

## Abstract for ICES Conference 2016

Title: Long Duration Sorbent Testbed

Authors: James Knox, David Long, Lee Miller, John Thomas, Greg Cmarik and David Howard

The LDST is a flight experiment demonstration designed to expose current and future candidate carbon dioxide removal system sorbents to an actual crewed space cabin environment to assess and compare sorption working capacity degradation resulting from long term operation. An analysis of sorbent materials returned to earth after approximately one year of operation in the International Space Station's (ISS) Carbon Dioxide Removal Assembly (CDRA) indicated as much as a 70% loss of working capacity of the silica gel desiccant material at the extreme system inlet location, with a gradient of capacity loss down the bed.

The primary science objective is to assess the degradation of potential sorbents for exploration class missions and ISS upgrades when operated in a true crewed space cabin environment. A secondary objective is to compare degradation of flight test to a ground test unit with contaminant dosing to determine applicability of ground testing.